

Course Title: Eco- Toxicology
Course Code AEM-506
Credit Hours: 1+1
Course Teacher: Dr. Tapas Paul

Lecture Plan

Theory

S.No.	Topics to be Covered	No. of classes
1.	Toxicity: factors influencing toxicity—environmental, genetic and nutritional factors	1
2.	Ecological effects of toxicants	1
3.	Genotoxicity and neurotoxicity	1
4.	Toxicology of emerging contaminants: PBDE and new-generation pesticides	1
5.	Antibiotics and antibiotic resistance	1
6.	Toxicity evaluation: toxicity testing and microcosm and mesocosm tests	1
7.	Dose-response relationships	1
8.	Bioassay, physiological and molecular evaluation	1
9.	Metabolism of toxic substances by aquatic microbes and other organisms; consequences	1
10.	Synergistic and antagonistic effects; acute poisons and accumulative poisons	1
11.	Biomonitoring and biosensors	1
12.	Bioaccumulation, bioconcentration and biomagnification	1
13.	Systemic effects of toxic metals, pesticides and herbicides	1
14.	Effects of selected toxicants on aquatic life and detoxification mechanisms	1
15.	Interrelationship of xenobiotics with other environmental variables	1
16.	Biofilter organisms	1
Total		16

Practical

S.No.	Topics to be Covered	No. of classes
1.	Introduction to toxicity testing methods and bioassay techniques	1

2.	Selection and acclimatization of test organisms for toxicity evaluation	1
3.	Preparation of heavy metal test solutions at different concentrations	1
4.	Toxicity evaluation of heavy metals on selected organisms by bioassay techniques	1
5.	Determination of acute toxicity of heavy metals	1
6.	Observation and recording of mortality and behavioural responses of test organisms	1
7.	Calculation of mortality percentage and determination of LC ₅₀	1
8.	Interpretation of dose-response relationships in toxicity testing	1
9.	Preparation of pesticide test solutions at different concentrations	1
10.	Toxicity assessment of pesticides on selected organisms	1
11.	Toxicity assessment of other contaminants on selected organisms	1
12.	Comparative evaluation of the toxicity of selected contaminants	1
13.	Observation of physiological responses of organisms exposed to toxicants	1
14.	Study of detoxification responses in selected aquatic organisms	1
15.	Assessment of the effects of environmental variables on toxicant toxicity	1
16.	Analysis, interpretation and reporting of toxicity assessment results	1
Total		16